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SERIES I. EVALUATION OF FOREIGN FRUITS AND NUTS

NO. 11. APPLES

EVALUATION OF EARLY RIPENING APPLE INTRODUCTIONS

by

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Evaluation of Early Ripening Apple Introductions

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INTRODUCTION

The U. S. Plant Introduction Station, Glenn Dale, Maryland in its role as the principal quarantine center of the U. S. Department of Agriculture, Crops Research Division, serves as a holding area for newly introduced plant imports, including pome fruits, until such time as they may be released by the U. S. Plant Quarantine Division. Distributions are then made to interested Federal and State Experiment Station plant breeders and pome fruit specialists. In addition to this service, the station maintains an orchard collection of pome fruit variety introductions which present a unique opportunity for the investigation of potentially valuable characters, including early ripening. There exists a definite need for better quality early maturing varieties to supply the fresh fruit summer market. The production of early apples has suffered for a number of years from competition from other fruits and vegetables because of poor quality among the early ripening types. Intensive efforts toward earlier peach varieties have proven gratifying in recent years; greater emphasis toward the same goal for new apple varieties would seem equally meritorious. Early apples of good quality would be of special interest to southern growers who would find ready market acceptance, as has been the experience of other fruits ahead of their season. The objective of this paper is to present new sources of early ripening apples that may be utilized in breeding projects which have earliness and high quality as their goals.

The current collection of foreign and domestic apples growing at the station includes slightly more than 800 named varieties and unnamed sorts of fruiting age. As part of the program of evaluating plant introduction materials, the annual recording of various phenological characteristics, including fruit descriptions, has been an important phase of the work. This paper presents information on 63 early-ripening apples tested at Glenn Dale for varying lengths of time up to 21 years, during which time evaluation records were made by F. C. Bradford, W. E. Whitehouse,

1/ Horticulturist in charge

H. F. Winters and the author. With few exceptions fruit characteristics of all of the varieties presented have been described by the author. In many cases at least three of the above investigators have either separately or cooperatively described the same variety.

PROCEDURE

The fruit descriptions have been abbreviated from the original field records in an effort to reduce the bulk of the publication. Information is presented only for those characteristics considered of major importance. The more commonly grown varieties, "Dutchess", "Yellow Transparent", and "Red Astrakan" are included as standards, which may be used for comparative purposes with the lesser known introduced varieties. Variety descriptions are arranged alphabetically according to variety name and the varieties are listed in Tables II, III, and IV in sequence of harvest date. Data are presented under a number of separate headings. Explanations of how these data were developed are as follows:

Variety Name

The variety names are used as they appear in the Plant Exploration and Introduction Inventory except as corrected, with no attempt made to anglicize the names of the varieties of foreign origin. Where possible, fruit descriptions as taken at Glenn Dale have been compared with those given in various reference works, but no guarantee is made for the authenticity of the introduced varieties.

Synonyms

The synonyms used have been taken from the reference works cited, from correspondence, and from data obtained from the source or originator. Where there is reasonable doubt as to the accuracy of the synonym, it is included, but followed by a question mark. Where a synonym has been used which appears incorrect this is so indicated.

Origin

The origin of a variety or seedling has been ascertained as far as possible from the literature cited, personal correspondence, station records, catalogs and other printed matter. As may be noted there are a number of varieties for which this information is not available.

Source

Information regarding the source of the trees or budwood as imported from abroad or obtained within this country was taken directly from the Plant Exploration and Introduction Inventory. Reference is made to the plant explorer and where he collected the material; or to the precise individual, institution or nursery from which the introduction was received.

Literature

The literature cited presents descriptive and/or other data about the variety in question. No attempt was made toward an exhaustive review of the literature. Considerable data regarding early citations were obtained from notes made by F. C. Bradford, former horticulturist in charge of this station.

Date of Full Bloom

In general, trees were considered to have reached full bloom when approximately 75 percent of the blossoms had opened. Date of full bloom represents the average for this occurrence for the years 1961 and 1962.

Fruit Characteristics

Fruit descriptions have been based on a minimum of six fruits selected as typical of the majority of the crop and include those taken during the years 1941, 1944, 1949, 1952, 1955, 1957, 1959, 1960 and 1961. The descriptions presented represent a summation and averaging of the evaluation work of all four investigators previously mentioned. It should be kept in mind that evaluations were made in terms of the possible value of the imports to apple breeding programs and not for commercial acceptance in their present form. As may be seen from the descriptions, many of the fruits do not compare favorably with established commercial varieties.

Size

Size measurements were taken with a Vernier caliper and represent the average of the diameters and lengths of at least six fruits considered as typical. Because a shortage of labor prevented a systematic thinning of orchard fruits, size measurements are generally somewhat smaller than those observed in the literature for these same varieties.

Shape

The terms used here for describing shape are principally the same as those of Hedrick (24). Where there is considerable variability in this character it is so indicated, otherwise shape may be assumed to be relatively uniform.

Color

Color data consists of the percentage of the fruit surface showing over-color, its pattern or type, and the ground-color.

Flesh

In summarizing the descriptions of the four individuals previously mentioned, the greatest variability existed in the characteristics of the flesh and the related determination of quality. Such characteristics as texture, juiciness and sweetness or acidity are very prone to subjectivity. However, because observations were made over a period of years, seasonal variations due to environmental differences may also have played an important part. This was particularly evident in several cases where different trees of the same introductions growing under different soil and moisture conditions were noted as being dissimilar in respect to flesh characteristics and quality.

Quality

Variations in the assessment of quality were largely traced to subjective bias toward a basically tender fleshed sweet fruit or a firm, tart one. An effort was made to compare the overall pattern of each evaluator with that of the others in order to establish at least to some degree the preferential bias of each, and to use this information to standardize the summations for each character described. Even so, it should be recognized that quality ratings represent the judgment of several individuals and no "taste panel" tests were performed.

Harvest Date

The harvest date as presented with each fruit description represents the average date for this occurrence during the years the fruits were observed at Glenn Dale between 1941 and 1961. The precise dates for each year of observation are listed in Table II and the range of ripening for several seasons is given in Table III. The average dates of full bloom and of harvest are presented in Table IV together with the average length of the growing season.

Although the data, especially for the earlier years, is not complete, there is enough overlapping of information to allow reasonable comparisons between all varieties. Some care should be taken in interpreting the data, but it is felt no serious errors will develop unless very detailed conclusions are drawn. In a number of cases the harvest period as observed at Glenn Dale is at variance with that included in the literature of several of the European and Canadian sources. Howlett (28), in making comparisons of harvesting dates of pear introductions, found European records almost valueless. This was considered to be true because of the European tendency to use the season of use rather than precise harvesting dates. This may have some bearing in the case of apples also, but probably different climatic factors experienced at Glenn Dale play as important a role toward earlier ripening.

Harvest dates were based on the ease of fruit removal from the branch, the color and maturity of the seeds, color of the skin, and more generally when the fruit was about ready to eat out of hand. The first sign of fruit drop was also used as a rough criteria for the degree of ripeness.

General Notes

Included along with the fruit descriptions is information pertaining to particular traits or observations considered pertinent, but not characterized under fruit description headings. These observations were not made systematically, as were the descriptions, and thus cannot be considered conclusive for all varieties. A number of the comments included here may be peculiar to local conditions at Glenn Dale and therefore not truly representative of the variety when grown in other areas.

Fire Blight Index

Considerable variation was noted in the degree of attack by the Fire Blight organism, Erwinia amylovora (Burr.) Winslow et al., among the various introductions. Although this disease is not considered as serious on apples as it is on pears and is rarely fatal to established apple trees, damage has been so severe among some introductions as to reduce fruit production to nil for one or more seasons.

A control program for fire blight, incorporating the use of Agrimycin, is being followed for nursery areas and mature pears. In the apple orchards the disease has been allowed to spread naturally, the only control consisting of the removal of cankers and severely damaged limbs toward the end of each season. It has been noted that during the last three years outbreaks have been widespread, being present in all parts of the various orchard blocks. In many cases trees with no visible signs of blight have been observed growing adjacent or between some of the most severely infected ones.

Observations were made during the years 1959, 1960 and 1961. For ease in recording and tabulation, fire blight infection was based on a numerical scale ranging from 0 to 5 in ascending order of symptom expression. The approximate percentages of spurs and branches showing symptoms were arbitrarily assigned as follows:

- 0 no visible signs of Fire Blight
- 1 less than 5 percent of tree showing disease symptoms
- 2 5 to 15 percent of tree showing disease symptoms
- 3 16 to 25 percent of tree showing disease symptoms
- 4 26 to 49 percent of tree showing disease symptoms
- 5 50 percent or more of tree showing disease symptoms

The indices presented with the fruit descriptions represent the averages of three years of observations for 61 of the 63 introductions described. Although the original observations were expressed in whole number categories, the averages in most cases result in fractions between them.

Since actual inoculations with the pathogen were not made, it is very probable that some trees which showed no symptoms during the three years may be escapes. Therefore, the data presented is only an indication of possible resistance and by no means actual proof thereof.

PRESENTATION OF RESULTS

In Table I the average temperature and total precipitation for the months of June, July and August are shown for the nine years fruit descriptions were made. Since the fruiting records for the years 1941, 1944, 1949 and 1952 were sporadic, no effort was made to correlate these climatic conditions with time of harvest. In 1955 temperatures were about 4 degrees below normal in June and 4 to 5 degrees above normal during July and August. Precipitation was slightly (0.63 in.) above normal for June, 2.86 inches below normal for July and 11.32 inches above normal for August. The latter month was the wettest on record at the station, primarily the result of hurricane "Connie" which dumped 9.98 inches of rain on Glenn Dale during the three days, August 12, 13 and 14. Although some of the earliest ripening varieties started a little late, as shown in Table II, the harvest season on the whole was somewhat earlier than 1957, 1959, 1960 and 1961. In rating the earliest year to ripen for each variety taken separately, 42 percent of the harvest dates taken in 1955 were earliest compared to 13 percent for 1957, 24 percent for 1959, 35 percent for 1960 and 29 percent for 1961. The unusually high temperatures during July when most of the varieties under study ripen would appear to be responsible for the earliness encountered during this year.

In 1957 temperatures were 2.4 degrees above normal in June and slightly below normal in July and August. Precipitation was about 2 inches above normal in June and about 2.5 and 2 inches below normal for July and August respectively. July was very similar in its dryness to July 1955. With the limited number of observations available during this year it is difficult to establish a seasonal pattern of ripening. Despite the above normal temperatures in June, ripening started off slowly. Of the observations made on early ripening varieties during this year, all except one (August 13) occurred within a period of eight days. If any trend can be established, it would appear that ripening in general was 7 to 10 days later than in 1959.

In 1959 temperatures were normal during June and July and 2.5 degrees above normal in August. Precipitation was slightly above normal in June, more than 4 inches above in July and almost an inch below normal in August. Ripening in 1959, when compared to 1960 and 1961 started off as early or perhaps somewhat earlier than the other two years. As the season progressed, varieties were generally later so that the overall pattern was that of a season which tended toward greater lateness than 1960 and 1961.

In 1960 temperatures were about 1.5 and 2.5 degrees below normal during June and July respectively and 2 degrees above normal in August. Precipitation was 3.33 inches below normal in June, the driest month of those recorded, while it was about 1.5 and 3 inches above normal for July and August respectively. Ripening during the early part of the season was much the same as in 1959, but as the season progressed, the varieties were somewhat earlier on the whole than in 1959 and 1961. The season was generally somewhat more advanced than the others under study, being succeeded only by 1955 in this respect.

In 1961 temperatures were 1.5 degrees below normal for June and less than a degree below normal for the other two months. Precipitation was very close to normal in June and somewhat less than 1.5 inches below normal in July and August. The season started somewhat later than in 1959 and 1960 for several of the very early varieties, then tended to catch up, despite lower temperatures and precipitation, and followed a similar pattern to 1959 and 1960. As the season advanced into early August, ripening again became somewhat later than in 1959 and 1960.

Although some differences have been pointed out between the last three years studied, the seasons were rather similar, 1961 being, on the whole, intermediate between the somewhat later 1959 and earlier 1960. The length of the season from the first variety to ripen, 'Kizil alma, to the last, 'Dr. Clifford', was 44 days in 1959, 43 days in 1960 and 47 days in 1961; certainly of little significant difference.

The range of ripening as illustrated in Table III shows the seasonal variation for each variety as it occurs over four years of observation in most cases. Where observations are for shorter or longer periods this is so indicated. The data reveals a comparison of the stability of individual varieties in ripening their fruits at approximately the same calendar date each year. Since the exact same years of observed ripening are not represented in all cases, only the more gross differences should be considered. Among the varieties listed, the general earliness or lateness of a variety did not appear to have as much influence on the degree of fluctuation of exact ripening dates as did apparent sensitivity to seasonal changes peculiar to individual varieties. Thus, there was no greater seasonal variation in ripening dates among the very early varieties than among the later ripening types. Because the varieties listed represent only the 63 earliest ripening individuals, selected from over 800 presently under observation at Glenn Dale, only a segment of the full ripening season is represented.

The average date of full bloom and of harvest together with the average length of growing season is shown in Table IV. The earliness of full bloom and the earliness of ripening are only very roughly correlated for most varieties. The two earliest ripening varieties, 'Kizil alma' and 'Early Crimson' are also the earliest to bloom. Likewise, 'Drap D'or Guemene', only two days short of the latest ripening variety listed is the latest variety to bloom. Some of the other varieties also show similar correlations, but on the whole the time of occurrence of one characteristic is not too indicative of the other. The length of time from full bloom of the earliest to the latest blooming varieties listed extends from April 3 for 'Early Crimson' to May 6 for 'Drap D'or Guemene', a period of 33 days; the period between date ripe for these same two varieties is June 28 to August 5, or 38 days. The total length of the ripening season is 43 days, 10 days longer than the corresponding blooming season. The length of time from full bloom to harvest ranges from 72 days for 'Kizil alma' to 105 days for 'Dr. Clifford'. The latter variety, although the latest ripening sort listed, is an early blooming clone in

comparison to the others in the group. An interesting observation is that the difference between the shortest, 72 days, and longest, 105 days, of the fruit development periods is 33 days; the same as the length of the blooming period.

The three-year averages of the degree of Fire Blight symptoms, as previously mentioned, are included with the fruit descriptions. Below, the varieties are divided into seven groups according to the degree of symptom expression.

Fire Blight Symptom Indices*								
	<u>0</u>	<u>0.1-0.4</u>	<u>0.5-0.9</u>	<u>1.0-1.9</u>	<u>2.0-2.9</u>	<u>3.0-3.9</u>	<u>4.0-5</u>	<u>Undeter- mined</u>
Number of in- troductions	4	9	12	26	7	3	0	2
Percent of total	6.4	14.3	19.0	41.3	11.1	4.8	0	3.1

* Indices are based on a numerical scale ranging from 0 to 5 in ascending order of symptom expression. Percentage of symptom expression previously described under Procedure.

The four varieties which showed no signs of Fire Blight during the three years of observation are 'Baladi', 'Kalmar Glasapple', 'Kizil alma' and 'Ruby Gem'. These of course could have been escapes. Perhaps of greater significance are the varieties which became infected with the pathogen but showed symptoms on a very small portion of the total tree area, indicating a high degree of resistance.

DISCUSSION

As indicated previously, the primary value of the introductions described in this paper is in their utilization in breeding programs directed toward early ripening varieties. Fruit characteristics such as size, appearance and quality in most cases are distinctly sub-standard when comparisons are made with commercial types. On the basis of quality alone, among 63 introductions under study only nine varieties were considered as good and only three as approaching excellent. As an example of a poor quality type, the variety 'Kizil alma' has but few characteristics which would make it of interest; primarily its extreme earliness, pleasing aroma and rosy pink skin; but countered against this are small size and pink-red, mealy flesh. A few of the varieties, however, as grown at Glenn Dale, approach commercial types in general fruit characteristics. Perhaps most outstanding are: 'Irish Peach', P.I. 104727, which develops as a very good early dessert apple but tends to be a little small. P.I. 143973, unofficially called 'Red Apple', which is perhaps one of the most brightly colored, attractive apples observed at Glenn Dale, also tends to be somewhat small. 'Signe Tillisch', P.I. 105132, except for a lack of overcolor, has most of the qualities necessary for a highly flavored early dessert type. Other varieties which have appeared worthy of consideration are 'Breakey', 'Feltham Beauty', 'Ingers', 'Laxton's Fortune', 'Mitschurins Samenloser' and 'Ruhm aus Kirchwarder'.

Table I. Average Daily Temperature and Total Monthly Precipitation Together with Departure from Long Term Means during June, July and August 1941, 1944, 1949, 1952, 1955, 1957, 1959, 1960 and 1961.

Year	Average Daily Temperature (degrees Fahrenheit) and Departure from Long Term Means						Total Monthly Precipitation (inches) and Departure from Long Term Means					
	June		July		August		June		July		August	
1941	70.8	-1.2	75.0	-0.5	72.6	-0.9	6.55	+3.16	8.18	+4.23	2.93	-1.69
1944	73.4	+1.4	76.0	+0.5	74.1	+0.6	2.19	-1.20	3.25	-0.13	6.65	+2.03
1949	72.3	+0.5	79.2	+3.7	75.2	+1.7	3.04	-0.61	3.13	-1.20	2.41	-1.66
1952	74.4	+2.4	77.3	+1.8	73.9	+0.4	3.41	-0.36	2.87	-1.45	4.15	-0.49
1955	67.8	-4.2	80.4	+4.9	77.8	+4.2	4.40	+0.63	1.43	-2.86	15.96	+11.32
1957	74.5	+2.4	75.2	-0.8	73.3	-0.8	6.01	+1.96	1.77	-2.53	3.16	-1.94
1959	72.1	0	76.0	0	76.7	+2.5	4.66	+0.61	8.42	+4.12	4.19	-0.91
1960	70.6	-1.5	73.6	-2.4	76.2	+2.0	0.72	-3.33	5.94	+1.64	8.10	+3.00
1961	70.6	-1.5	75.2	-0.8	73.9	-0.3	3.98	-0.07	2.81	-1.49	3.72	-1.38

Table II. Harvest Dates of Early Ripening Apples for the Years 1941, 1944, 1949, 1952, 1955, 1957, 1959, 1960 and 1961.

Variety	P.I. No.	1941	1944	1949	1952	1955	1957	1959	1960	1961
Kizil alma	30327		6/27		6/23			6/24		6/25
Early Crimson	127007					6/30		6/25	6/25	7/4
Laxton's Leader	127013					7/10		7/3	7/6	7/5
Gyllenkroks Astrakan	104794				7/2	7/10		7/12	7/13	
Red Astrakan	148147						7/14	7/2	7/8	7/13
Lowland Raspberry	143181					7/13		7/8	7/10	7/8
Yephory's Chernogous	144031					7/13		7/8	7/10	7/8
Boskill #3	144012					7/3		7/16	7/6	7/16
Yellow Transparent	148149	7/17						7/10	7/6	7/12
Kutanka	144018					7/8		7/16	7/12	7/7
P. J. Berguis	102144	7/19	7/13		7/15	7/9	7/20	7/11	7/12	7/10
Safsthalm	104811	7/19	7/12			7/8		7/16		7/17
Boskill #4	144013						7/20	7/14	7/12	7/11
Gladstone	102140					7/13	7/20		7/16	7/9
Ottawa #452	137579					7/20		7/16	7/11	7/14
Kavlas	104799						7/16	7/17	7/12	
Heyer #12	151720						7/19	7/15	7/18	7/13
Crimson Beauty	143173					7/20		7/16	7/14	7/13
Macross	143183					7/20	7/19	7/11	7/18	7/15
St. Everard	123732							7/20	7/13	7/18
Zigeunerinapfel	126998						7/19	7/18	7/14	7/16
Kuotesaho	157209					7/14		7/17	7/21	7/15
Laxton's Pioneer	127015					7/15		7/18	7/20	7/15
Belle Imperiale	126495						7/22	7/17	7/14	7/15
Irish Peach	104727		7/17	7/20					7/15	7/19
Dutchess	148150						7/19	7/18	7/16	7/20
Hampus	104795					7/13		7/26	7/13	7/21
Pomme Framboise	131975						7/20	7/16	7/19	7/20
Vinnoe	151262						7/19	7/21	7/16	7/19
Sharp's Early	133569					7/23		7/22	7/20	7/18
Ingers	114318						7/19	7/24	7/21	7/20
Breakey	123906	7/23				7/20		7/22	7/18	7/27
Antonovka Shafran	104990	7/19	7/19					7/29		
Antonovka Kamenichka	137036						7/19	7/27	7/25	7/23
Laxton's Epicure	123744		7/19					7/28	7/21	7/26
Northern Dumplin'	137093							7/29	7/25	7/21
Ruby Gem	133518							7/25	7/27	7/23
Feltham Beauty	127008					7/20		8/2	7/26	7/22
Mitschurins Samenloser	154165						7/19	7/28	8/2	7/24
Ruhm aus Kirchwarder	126588	7/23				8/3		7/25		7/24
Battleford #2	144010				8/1	7/20		7/29	7/27	
Quarrenden Red	126889							7/20	7/28	8/2
Miron Sacharanij	154164							7/26	7/24	7/30
Newport Cross	104615				8/5	7/28		7/26		7/27
(no name)	143973					7/28		7/22	8/3	8/4

Table II. - Continued

<u>Variety</u>	<u>P.I. No.</u>	<u>1941</u>	<u>1944</u>	<u>1949</u>	<u>1952</u>	<u>1955</u>	<u>1957</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>
Hereford Cross	104614		8/3			7/28		8/2	7/25	
Kalmar Glasapple	104798							7/26	8/2	7/30
Signe Tillisch	105132			8/9		7/28		7/28	7/26	7/30
Oxbo	127703					8/1		8/5	7/30	7/24
(no name)	102174			7/31		7/28			8/2	7/30
Sunset	157216					7/28		8/4	8/1	7/30
Bushy Grove	135999					7/28		8/1	8/1	8/3
Baladi	187099							8/4	8/1	7/29
Bella de Jardines	105498					8/10		8/3	7/29	7/28
Flintynskie	131035					8/3		8/2	7/29	8/5
Cooper's Seedling	157215							8/2	7/30	8/7
Sweet Bough	143190							8/5	8/3	7/31
Reinette Jamin	135645							8/5	8/4	8/1
Jaune lu Desert	161762							8/5	8/2	8/7
Millicent A. Barnes	131079							7/31	8/8	8/7
Drap D'or Guemene	131823							8/4	8/1	8/1
Laxton's Fortune	127009						8/13	8/3	8/5	8/8
Dr. Clifford	131283							8/6	8/5	8/10



Table III. Harvest Season of Early Ripening Apples Showing Range of Ripening Over Several Years* and Average Harvest Dates.

Variety	June										July																				
	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Kizil alma																															
Early Crimson																															
Laxton's Leader																															
Gyllenkroks Astrakan																															
Red Astrakan																															
Lowland Raspberry																															
Yephory's Chernogous																															
Boskill #3																															
Yellow Transparent																															
Kutanka																															
P. J. Berguis																															
Safstaholm																															
Boskill #4																															
Gladstone																															
Ottawa #452																															
Kavlas																															
Heyer #12																															
Crimson Beauty																															
Macross																															
St Everard																															
Zigeunerinapfel																															
Kuotesaho																															
Laxton's Pioneer																															
Belle Imperiale																															
Irish Peach																															
Dutchess																															

* Range of ripening represents four years observations except where noted.

Table III. - Continued

[illegible]

Table IV. Average Date of Full Bloom and of Harvest Together with Average Length of Growing Season.

Variety	Average date of full bloom	Average date of harvest	Average number of days between full bloom and harvest dates
Kizil alma	4/14	6/25	72
Early Crimson	4/3	6/28-29	86
Laxton's Leader	4/22	7/6	75
Gyllenkroks Astrakan	4/25	7/9	75
Red Astrakan	4/24	7/9	76
Lowland Raspberry	4/26	7/10	75
Yephory's Chernogous	4/27	7/10	74
Boskill #3	4/27	7/10	74
Yellow Transparent	4/26	7/11	76
Kutanka	4/27	7/11	75
P. J. Berguis	4/25	7/13-14	79
Safstaholm	4/28	7/14	77
Boskill #4	4/28	7/14	77
Gladstone	5/1	7/14-15	74
Ottawa #452	4/23	7/15	83
Kavlas	4/25	7/15	81
Heyer #12	4/25	7/16	82
Crimson Beauty	4/24	7/16	83
Macross	4/25	7/16-17	82
St. Everard	4/24	7/17	84
Zigeunerinapfel	4/23	7/17	85
Kuotesaho	4/24	7/17	84
Laxton's Pioneer	4/27	7/17	81
Belle Imperiale	4/28	7/17	80
Irish Peach	4/23	7/18	86
Dutchess	4/23	7/18	86
Hampus	4/24	7/18	85
Pomme Framboise	4/28	7/19	82
Vinnoe	4/24	7/19	86
Sharp's Early	4/29	7/21	83
Ingers	5/5	7/21	78
Breakey	4/24	7/22	89
Antonovka Shafran	4/28	7/22	85
Antonovka Kamenichka	4/25	7/23-24	89
Laxton's Epicure	4/26	7/23-24	88
Northern Dumplin	4/27	7/25	89
Ruby Gem	4/22	7/25	94
Feltham Beauty	5/2	7/25	84
Mitschürins Samenloser	4/25	7/26	92
Ruhm aus Kirchwarder	4/24	7/26-27	93
Battleford #2	4/24	7/27	94
Quarrenden Red	4/27	7/27	91
Miron Sacharanij	4/29	7/27	89
Newport Cross	4/23	7/29	97
P.I. 143973	4/26	7/30	95

Table IV. - Continued

Variety	Average date of full bloom	Average date of harvest	Average number of days between full bloom and harvest dates
Hereford Cross	4/23	7/30	98
Kalmar Glasapple	4/25	7/30	96
Signe Tillisch	4/28	7/30	93
Oxbo	4/22	7/30-31	99
P.I. 102174	4/29	7/30-31	92
Sunset	4/26	7/31	96
Bushy Grove	4/27	7/31-8/1	95
Baladi	4/28	8/1	95
Bella de Jardines	4/25	8/2	99
Flintynskie	4/22	8/2	102
Cooper's Seedling	4/26	8/3	99
Sweet Bough	5/1	8/3	94
Reinette Jamin	4/24	8/3	101
Jaune lu Desert	5/2	8/4-5	94
Millicent A. Barnes	4/29	8/5	98
Drap D'or Guemene	5/6	8/5	91
Laxton's Fortune	4/27	8/7	102
Dr. Clifford	4/24	8/7	105

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'Antonovka Kamenichka'

P.I. 137036

Synonyms: 'Antonowka Kamenithka'

Origin: listed as a Russian import by Boccard's Nursery, Geneva, Switzerland.

Source: Pepinieres Boccard, Geneva, Switzerland, 4/30/40.

Literature: Duru, E. (19), and Grebnitskii, A. S. (22).

Date full bloom: April 25

Fruit characteristics:

Size: diameter 2 3/4", length 2 1/4"

Shape: oblate

Color: 10 to 50%, striped and blushed, pink over greenish yellow

Flesh: greenish white, soft, breaking, juicy, sweet to sub-acid

Quality: poor to fair

Harvest date: July 22-25

Note: said to bear even at 1600 and 1800 meters altitude (Boccard Nursery, Geneva, Switzerland).

Fire blight Index: 3.0

'Antonovka Shafran'

P.I. 104990

Synonyms: 'Antonowka schafrannaia', 'Safranfar bene Antonowka'

Origin: I. V. Michurin, Exp. Pomol. Nursery, Kozlov, U.S.S.R.

A cross, 'Antonovka' (common) X 'Orleans Reinette'.

Source: N. E. Hansen, S. Dakota State Agr. Coll., Brookings, South Dakota, 3/31/34

Literature: Beach, S. A. (2), Bunyard, Ed. A. (7), Roberts, O. C. et al. (58), and Zaets, V. K. (74).

Date full bloom: April 28

Fruit characteristics:

Size: diameter 1 7/8", length 1 5/8"

Shape: variable, roundish oblate to oblong truncate

Color: 20%, striped red over yellowish green

Flesh: creamy white, firm, crisp, juicy, sub-acid to acid

Quality: poor

Harvest date: July 19-25

Fire blight Index: 1.0

'Baladi'

P.I. 187099

Synonyms: none known

Origin: not known

Source: Dept. of Agr., Giza, Egypt, 3/1/50

Literature: none found

Date full bloom: April 27-30

Fruit characteristics

Size: diameter 2", length 1 3/4"

Shape: roundish truncate

Color: yellow, no blush

Flesh: white, tender to soft, mealy, dry, sweet

Quality: poor

Harvest date: August 1

Note: small, mealy, sweet apple with considerable brown streaking throughout flesh, mostly below skin and around core.

Fire blight Index: 0

'Battleford #2'

P.I. 144010

Synonyms: none known

Origin: from Russian apple seeds sent to Boughen Nurseries and first fruited at Battleford, Saskatchewan, Canada.

Source: Boughen Nurseries, Valley River, Manitoba, Canada, 5/22/42.

Literature: none found

Date full bloom: April 24

Fruit characteristics:

Size: diameter 2 3/8", length 2"

Shape: roundish oblate, somewhat truncate

Color: 60 to 95%, striped and blushed, crimson red over pale yellow

Flesh: white, firm to tender, crisp, breaking, juicy, sweet to sub-acid.

Quality: good

Harvest date: July 27

Note: tendency to breakdown, some water core, breakdown at cortical area near skin.

Fire blight Index: 1.0

'Bella de Jardines'

P.I. 105498

Synonyms: 'De Jardin'

Origin: of French origin, dates to the beginning of 19th century and seems to come from the environs of Paris.

Source: Viveros Manuel San Juan, Sabinan, Zaragoza Province, Spain, 5/4/34.

Literature: Diel (15), Leroy, A. (33), and Simon-Louis (62).

Date full bloom: April 25

Fruit characteristics:

Size: diameter 3 1/4", length 2 3/8"

Shape: roundish oblate to oblate

Color: 30 to 80%, striped and splashed crimson red over greenish yellow

Flesh: greenish to creamy white, tender, crisp, breaking, juicy, sub-acid to acid.

Quality: fair to good

Harvest date: July 31 to August 4

Note: decidedly tart until full ripe, then acid disappears leaving fruit with a slight banana flavor.

Fire blight Index: 1.66

'Belle Imperiale'

P.I. 126495

Synonyms: 'Imperiale' (?)

Origin: thought to be France.

Source: Pepinieres de La Maladrerie, Caen, France, 1/17/48.

Literature: Simon-Louis (62)

Date full bloom: April 28

Fruit characteristics:

Size: diameter 2 1/4", length 1 5/8"

Shape: oblate

Color: 95 to 100% red over yellow

Flesh: creamy, tender, mealy, moderate juicy to dry, sweet

Quality: poor to fair

Harvest date: July 16-18

Note: a very mild flavored apple which tends to be quite dry and mealy.

Of questionable value.

Fire blight Index: 2.16

'Boskill #3'

P.I. 144012

Synonyms: none known

Origin: from Russian apple seeds sent to Boughen Nurseries, Manitoba,
and first fruited by Mr. Frank Boskill, Rutland, Saskatchewan, Canada.

Source: Boughen Nurseries, Valley River, Manitoba, Canada, 5/22/42.

Literature: Patterson, C. F. (51).

Date full bloom: April 27

Fruit characteristics:

Size: diameter 2 5/8", length 2 1/8"

Shape: roundish, somewhat truncate

Color: 50 to 60%, striped, crimson red over greenish yellow

Flesh: creamy white, firm to tender, crisp to melting, moderately
juicy, sweet to sub-acid.

Quality: fair to good

Harvest date: July 6-14

Note: very mild flavored, tends to drop prematurely, resembles

Ben Davis in appearance.

Fire blight Index: 0.16

'Boskill #4'

P.I. 144013

Synonyms: none known

Origin: from Russian apple seeds sent to Boughen Nurseries, Manitoba, and
first fruited by Mr. Frank Boskill, Rutland, Saskatchewan, Canada.

Source: Boughen Nurseries, Valley River, Manitoba, Canada, 5/22/42.

Literature: Patterson, C. F. (51).

Date full bloom: April 28

Fruit characteristics:

Size: diameter 2 1/2", length 2"

Shape: roundish

Color: 10%, blushed, pink over yellowish green

Flesh: greenish white, tender to soft, crisp, breaking, moderately juicy, sweet to somewhat insipid.

Quality: fair

Harvest date: July 14

Note: prolific bearer, watery breakdown, of questionable value.

Fire blight Index: 1.33

'Breaker'

P.I. 123906

Synonyms: none known

Origin: Dominion Exp. Farm, Morden, Manitoba, Canada; a seedling of 'Blushed Calville' selected in 1929.

Source: M. B. Davis, Central Exp. Farm, Dept. of Agr., Ottawa, Canada, 4/6/37.

Literature: Brooks, R. & H. P. Olmo (6), and Leslie, W. R. (34, 36, 37, 38).

Date full bloom: April 24

Fruit characteristics:

Size: diameter 2 7/8", length 2"

Shape: roundish oblate

Color: 60-80%, striped and splashed red over greenish yellow

Flesh: white, tender, crisp, breaking, juicy, sweet to sub-acid

Quality: good

Harvest date: July 21-23

Note: large ornamental flowers, good dessert apple

Fire blight Index: 1.0

'Bushey Grove'

P.I. 135999

Synonyms: 'Bushey Grove'

Origin: raised by Mr. J. T. Good at Bushey, Herts, England in 1897.

Parentage said to be 'Queen' X 'Bismarck'.

Source: T. Hilling & Co., Chobham, Woking, Surrey, England, 3/20/40.

Literature: Taylor, H. V. (67).

Date full bloom: April 27

Fruit characteristics:

Size: diameter 3 3/8", length 2 5/8"

Shape: roundish oblate to conical

Color: 40 to 70%, striped and splashed, pink red over greenish yellow

Flesh: greenish white, firm, crisp, breaking, juicy, sub-acid to acid, sprightly.

Quality: good for culinary

Harvest date: July 31-August 1

Note: large very tart apple, tendency to rot while ripening

Fire blight Index: 1.33

'Cooper's Seedling'

P.I. 157215

Synonyms: none known

Origin: not known

Source: Blackmoor Nurseries, Hampshire, England, 2/7/47.

Literature: Taylor, H. V. (67).

Date full bloom: April 26

Fruit characteristics:

Size: diameter 2 7/8", length 2 1/4"

Shape: roundish to conical

Color: 10%, blushed red over greenish yellow

Flesh: white, tender, melting, moderately juicy, sweet to sub-acid

Quality: fair

Harvest date: August 3

Note: bears at an early age, fruits have tender flesh, poor keeper.

Fire blight Index: 1.33

'Crimson Beauty'

P.I. 143173

(also 260241)

Synonyms: 'Crimson Pippin', 'Crimson Scarlet Pippin', 'Leeds Beauty',
'Scarlet Pippin'.

Origin: about 1860 at Lynn, Leeds county, Ontario, Canada.

Source: Stone & Wellington, Fonthill Nurseries, Toronto, Ontario,
Canada, 12/5/41.

Literature: Beach, S. A. (2), and Roberts, O. C. et al. (58).

Date full bloom: April 24

Fruit characteristics:

Size: diameter 2 3/4", length 2 1/8"

Shape: roundish oblate

Color: 75%, striped and splashed, red over yellow

Flesh: white, firm to tender, crisp to melting, juicy, sub-acid to acid

Quality: good

Harvest date: July 16

Note: still bright and attractive after 7 weeks storage, although slight
shriveling, becomes mild to sub-acid in storage.

Fire blight Index: 0.83

'Drap D'or Guemene'

P.I. 131823

Synonyms: 'Drap d'or de Guemene'

Origin: not known

Source: Lepage & Cie., Angers (Maine-et-Loire), France, 3/10/39.

Literature: none found

Date full bloom: May 6

Fruit characteristics:

Size: diameter 2 3/8", length 1 7/8"

Shape: roundish oblate

Color: 60% striped red over yellow, heavy russetting

Flesh: white, firm, crisp, breaking, tough, moderately juicy, sub-acid.

Quality: poor

Harvest date: August 5

Note: heavy russeting makes fruit unattractive.

Fire blight Index: 0.66

'Dr. Clifford'

P.I. 131283

Synonyms: none known

Origin: not known

Source: Blackmoor estate, Blackmoor, Liss, Hants, England, 1/5/39.

Literature: Taylor, H. V. (67).

Date full bloom: April 24

Fruit characteristics:

Size: diameter 3", length 2 3/8"

Shape: conical

Color: 60%, striped and splashed, red over yellow

Flesh: creamy, soft, breaking, moderately juicy, sub-acid.

Quality: fair, for culinary

Harvest date: August 7

Fire blight Index: 0.33

'Dutchess'

P.I. 148150

Synonyms: 'Baroveski', 'Borovitsky', 'Borowicki', 'Borowski', 'Borowitski', 'Borowitsky', 'Charlamowski', 'Charlamowski d'Antonne', 'Charlamowskircher Nallevid', 'Charlamowsky', 'Duchess', 'Duchess of Oldenberg', 'Duchess of Oldenburgh', 'Duchesse d' Oldenbourg', 'Dutchess of Oldenburg', 'Dutchess of Oldenburgh', 'New Brunswick', 'Oldenburg', 'Oldenburgh', 'Smith's Beauty of Newark', 'Russian', 'Summer Peach'.

Origin: Russian, introduced into England in 1824. Introduced into USA 1835.

Source: Stark Bros. Nurseries, Louisiana, Missouri, 3/15/37.

Literature: Beach, S. A. (2), Bunyard, Ed. A. (7), Bunyard, G. and O. Thomas (9), Downing, A. J. (18), Pom. Soc. France (55), Roberts, O. C. et al. (58), Taylor, H. V. (67), and Wright, J. (72).

Date full bloom: April 23-24

Fruit characteristics:

Size: diameter 2 5/8", length 2"

Shape: oblate

Color: 70%, striped and blushed, red over yellowish green

Flesh: creamy white, tender to soft, breaking to somewhat mealy, medium dry, mostly sweet, some sub-acid.

Quality: mostly fair, some good

Harvest date: July 16-20

Fire blight Index: 0.50

'Early Crimson'

P.I. 127007

Synonyms: 'Laxton's Early Crimson'

Origin: raised by Laxton Bros. Nursery, Bedford, England, in 1908 from a cross of 'Worcester' X 'Gladstone'.

Source: Laxton Bros. Nursery, Bedford, England, 2/8/38.

Literature: Taylor, H. V. (67).

Date full bloom: April 3

Fruit characteristics:

Size: diameter 2 1/4", length 2"

Shape: roundish ovate to conical

Color: 75 to 100%, blush, some striped, crimson red over greenish yellow

Flesh: white, mostly tender, crisp to mealy, moderately juicy to dry, mild, sweet, almost insipid.

Quality: poor

Harvest date: June 27-30

Note: fully self-fertile, a heavy cropper.

Fire blight Index: 2

'Feltham Beauty'

P.I. 127008

Synonyms: none known

Origin: raised and introduced in 1908 by Messrs. Veitch and said to be a cross of 'Cox's Orange' X 'Gladstone'.

Source: Laxton Bros., Bedford, Ltd., Bedford, England, 2/8/38.

Literature: Bunyard, Ed. A. (7), and Taylor, H. V. (67).

Date full bloom: May 2

Fruit characteristics:

Size: diameter 2 5/8", length 2"

Shape: roundish conical

Color: 70 to 90%, striped and blushed, crimson red over greenish yellow.

Flesh: white, soft, crisp, moderately juicy, sweet to sub-acid.

Quality: fair to mostly good

Harvest date: July 25

Note: usually good quality, something like 'Delicious' when fully ripe, turns mealy in storage.

Fire blight Index: 1.0

'Flintynskie'

P.I. 131035

Synonyms: 'Flintinge Aeble'

Origin: not known

Source: Szkoła Ogrodnicza Wielkopolskiej izby Rolniczej, W. Koxminie, (Wlkp) Poland, 12/14/38.

Literature: Florin, R. (20), and Kobel, F. (29).

Date full bloom: April 22

Fruit characteristics:

Size: diameter 3 3/8", length 2 3/4"

Shape: roundish oblate to conical

Color: 40%, striped and blushed, orange red over greenish yellow
 Flesh: greenish white, tender, crisp, breaking, moderately juicy to dry, sweet to sub-acid.
 Quality: poor to fair
 Harvest date: July 31-August 4
 Note: good size, but ripens unevenly and of only fair quality at best; of questionable value.
 Fire blight Index: 2.33

'Gladstone'

P.I. 102140
 (also 206023)

Synonyms: 'Jackson's Seedling', 'Monsieur Gladstone', 'Mr. Gladstone'
 Origin: a chance seedling found near Kidderminster, England and introduced by Blakedown Nursery in 1868.
 Source: Carl G. Dahl, Forestandare for Alnarps Tradgardsskola, Akarp, Sweden, 3/23/33.
 Literature: Beach, S. A. (2), Bunyard, Geo. (3), Hoblyn, T. N. (26), Straight, E. M. (66), Taylor, H. V. (67), and Wright, J. (72).
 Date full bloom: May 1
 Fruit characteristics:
 Size: diameter 2 3/8", length 1 7/8"
 Shape: roundish oblate to conical
 Color: 80 to 100%, striped and blushed, crimson red over greenish yellow.
 Flesh: creamy white, tender, crisp to somewhat mealy, moderately juicy, sweet to sub-acid.
 Quality: fair to good.
 Harvest date: July 9-20
 Note: good dessert apple for this season, however has size against it; heavy cropper, good pollinator.
 Fire blight Index: 1.33

'Gyllenkroks Astrakan'

P.I. 104794

Synonyms: 'Astrakan Gyllenkroks', 'Gyllinbrooks Astrachan'
 Origin: a Swedish variety; rather widely grown in that country.
 Source: Dr. C. G. Dahl, Experiment-alfaltet, Akarp, Alnarp, Sweden, 3/16/34.
 Literature: Roberts, O. C. et al. (58) and Verner, L. (69).
 Date full bloom: April 25-26
 Fruit characteristics:
 Size: diameter 2 5/8", length 1 7/8"
 Shape: roundish oblate to truncate
 Color: 70%, striped and blushed red over greenish yellow.
 Flesh: creamy white, tender, mealy, moderately juicy, sweet to sub-acid.
 Quality: fair
 Harvest date: July 9
 Fire blight Index: 0.16

'Hampus'

P.I. 104795

Synonyms: none known

Origin: a Swedish variety; rather widely grown in that country.

Source: Dr. C. G. Dahl, Experiment-alfaltet, Akarp, Alnarp, Sweden, 3/16/34.

Literature: Kvalle, E. (31), and Verner, L. (69).

Date full bloom: April 24

Fruit characteristics:

Size: diameter 2 1/8", length 1 5/8"

Shape: roundish oblate

Color: 30 to 70%, striped and splashed crimson red over pale green

Flesh: white, tender to soft, somewhat mealy, moderately juicy, sweet to sub-acid.

Quality: poor to fair

Harvest date: July 18

Note: does not keep well, tendency for flesh to break down and turn brown in cortical area near skin as fruit ripens.

Fire blight Index: 0.33

'Hereford Cross'

P.I. 104614

Synonyms: none known

Origin: Agr. and Hort. Res. Sta., Long Ashton, Bristol, England, 1913.

Said to be 'Cox's Orange Pippin' open pollinated.

Source: Univ. of Bristol through Res. Sta., Bristol, England, 3/9/34.

Literature: Roberts, O. C. et al. (58), and Spinks, G. T. (64).

Date of full bloom: April 23

Fruit characteristics:

Size: diameter 2 3/4", length 1 7/8"

Shape: oblate

Color: 80 to 100%, blushed to solid, dark red over greenish yellow.

Flesh: creamy white, soft, crisp to mostly mealy, moderately juicy, sweet.

Quality: fair

Harvest date: July 28 to August 1

Note: a bland flavored variety, very attractive exterior, heavy cropper, bruises easily, some water core and internal browning near skin during some years, appears to be affected adversely by drought and heat.

Fire blight Index: 0.50

'Heyer #12'

P.I. 151720

Synonyms: 'Meyer #12' (incorrect)

Origin: C. A. Heyer, Neville, Saskatchewan, Canada

Source: Dominion Exp. Sta., Morden, Manitoba, Canada, 9/12/45.

Literature: Boughen, W. L. (5), Leslie, W. R. (34, 35, 36), Lloyd, J. (39, 40), Richards, J. C. (57), and Wright, P. H. (73).

Date full bloom: April 25

Fruit characteristics:

Size: diameter 2 1/4", length 2"

Shape: globular

Color: pale yellow, no blush
 Flesh: creamy white, tender to soft, mealy, moderately juicy, sweet to sub-acid.
 Quality: poor to fair
 Harvest date: July 15-17
 Note: very tender skin, does not need peeling for pie or apple sauce; skin dissolves on cooking; apparently does better in Canada than here.
 Fire blight Index: 0.50

'Ingers'

P.I. 114318

Synonyms: none known
 Origin: not known
 Source: N. Esbjerg, director, Statens forsogsstation Blangsted, Odense, Denmark, 4/10/36.
 Literature: none found
 Date full bloom: May 5
 Fruit characteristics:
 Size: diameter 2 7/8", length 2 5/8"
 Shape: roundish ovate
 Color: 40-70%, striped and splashed red over yellowish green
 Flesh: white, tender, crisp, juicy, sub-acid to acid.
 Quality: good
 Harvest date: July 21
 Note: good dessert apple, although somewhat more tart than desirable
 Fire blight Index: 1.33

'Irish Peach'

P. I. 104727

Synonyms: 'Early Crofton', 'Frueher Crofton', 'Irischer Pfirsichapfel', 'Irish Peachapple', 'Irländischer Pfirsichapfel', 'Jrischer Pfirsichapfel', 'Jrisch Peach'.
 Origins: an Irish variety, introduced into England early in 19th century.
 Source: East Malling Res. Stat., East Malling, Kent, England, 3/17/34.
 Literature: Anonymous (1), Biedenfeld, F. von (3), Bunyard, Ed. A. (7), Bunyard, Geo. (8), Bunyard, Geo. and O. Thomas (9), Cook, H. H. (12), Crane, M. B. (13), Darlington, C. D. and A. A. Moffett (14), Dochnahl, F. (17), Downing, A. J. (18), Florin, R. (20), Hogg, R. (27), Kobel, F. (29), Lelong, B. M. (32), Roberts, O. C. et al. (58), Shand, P. M. (61), Taylor, H. V. (67), Tydeman, H. M. (68), and Wright, J. (72).
 Date full bloom: April 23
 Fruit characteristics:
 Size: diameter 2 1/8", length 1 5/8"
 Shape: oblate
 Color: 30 to 65%, striped red over yellow.
 Flesh: creamy, firm to tender, crisp, breaking, moderately juicy, sweet to sub-acid.
 Quality: good to excellent
 Harvest date: July 17-19

Note: good texture and quality for early dessert apple, but too small; should be of interest to breeders. Considered to be a good pollinator.
 Diploid chromosome number. Bears on tips and not on spurs.
 Fire blight Index: 1.0

'Jaune lu Desert'

P.I. 161762

Synonyms: none known
 Origin: not known
 Source: Pépinières Gaiyard-Rome, Chateauroux, Indre, France, 1/8/48.
 Literature: none found
 Date full bloom: May 2-3
 Fruit characteristics:
 Size: diameter 2 3/8", length 2 1/8"
 Shape: roundish conical
 Color: 80%, blushed yellowish orange over green
 Flesh: white, firm, mealy to somewhat corky, dry, sweet to insipid
 Quality: poor
 Harvest date: July 4
 Fire blight Index: 1.25

'Kalmar Glasäpple'

P.I. 104798

Synonyms: none known
 Origin: grown rather widely in Sweden, believed to have originated there.
 Source: Dr. Carl G. Dahl, director, Experimentalfältet, Akarp, Alnarp, Sweden, 3/16/34.
 Literature: Verner, L. (69).
 Date full bloom: April 25
 Fruit characteristics:
 Size: diameter 2 5/8", length 1 3/4"
 Shape: oblate
 Color: greenish yellow, no blush
 Flesh: creamy, firm, crisp, moderately to abundantly juicy, sub-acid.
 Quality: fair
 Harvest date: July 26 to August 2
 Fire blight Index: 0

'Kavlås'

P.I. 104799

Synonyms: none known
 Origin: believed to be Sweden.
 Source: Dr. Carl G. Dahl, director, Experimentalfältet, Akarp, Alnarp, Sweden, 3/16/34.
 Literature: Florin, R. (20)
 Date full bloom: April 25
 Fruit characteristics:
 Size: diameter 3 1/4", length 2 5/8"
 Shape: roundish oblate slightly conical

Color: 60 to 85% striped and splashed red over yellowish green

Flesh: creamy white, tender, crisp, moderately juicy, sweet to sub-acid.

Quality: fair to good

Harvest date: July 13-17

Note: tends to ripen unevenly, possible value as an early cooking apple.

Fire blight Index: 0.66

'Kizil alma'

P.I. 30327

Synonyms: none known

Origin: Khotan, Chinese Turkestan

Source: Mr. Frank N. Meyer, USDA Agricultural Explorer, Turkestan,
11/25/10.

Literature: none found

Date full bloom: April 14

Fruit characteristics:

Size: diameter 1 5/8", length 1 1/4"

Shape: roundish oblate

Color: 80 to 100% blushed bright rosy pink over very pale yellow

Flesh: pinkish red, mealy, sweet, highly aromatic

Quality: poor

Harvest date: June 24-26

Note: the trees do not grow to very large dimensions, but are able to
stand drought, alkali, and neglect.

Fire blight Index: 0

'Kuotesaho'

P.I. 157209

Synonyms: none known

Origin: not known

Source: O. Syring, Plantskola, Vaasa, Finland, 2/4/47.

Literature: none found

Date full bloom: April 23-26

Fruit characteristics:

Size: diameter 3", length 2 1/2"

Shape: roundish oblate to conical

Color: 50 to 90%, striped and splashed crimson to pinkish red
over greenish yellow.

Flesh: creamy white, firm to tender, crisp to melting, juicy,
mostly sub-acid.

Quality: fair to good

Harvest date: July 17

Note: tendency toward breakdown of flesh, some watercore, otherwise
would be promising as an early culinary type.

Fire blight Index: 1.8

'Kutanka'

P.I. 144018

Synonyms: 'Kitaika' (?)

Origin: Russian apple grown from named scions originally from Leningrad.

Source: Boughen Nurseries, Valley River, Manitoba, Canada, 5/22/42.

Literature: none found

Date full bloom: April 24-30

Fruit characteristics:

Size: diameter 2 5/8", length 2"

Shape: roundish oblate to truncate

Color: 40 to 90%, striped and splashed, crimson over yellowish green

Flesh: white, firm to tender, crisp to melting, juicy, sub-acid

Quality: fair

Harvest date: July 9-13

Note: prolific bearer, ripens unevenly, some watercore some years, shriveling, internal breakdown and mealliness after two months cold storage.

Fire blight Index: 1.16

'Laxton's Epicure'

P.I. 123744

Synonyms: none known

Origin: introduced by Laxton's Nursery, Bedford, England to commerce in 1929, 'Cox's Orange' X 'Wealthy'.

Source: Geo. Bunyard & Co., Ltd., Maidstone, Kent, England, 4/20/37.

Literatures: Norbury, C. P. (50), Potter, J. M. S. (56), and Roberts, O. C. et al. (58).

Date full bloom: April 26

Fruit characteristics:

Size: diameter 2 3/8", length 2"

Shape: roundish to somewhat oblate

Color: 50 to 100%, striped and splashed, crimson over yellow.

Flesh: white, tender, breaking, juicy, sweet to slightly sub-acid.

Quality: fair

Harvest date: July 23

Note: heavy cropper, good quality some years; listed as self-fertile.

Fire blight Index: 1.50

'Laxton's Fortune'

P.I. 127009

(also 238788)

Synonyms: 'Fortune'

Origin: raised by Laxton Nurseries, Bedford, England in 1904 from 'Cox's Orange Pippin' X 'Wealthy'.

Source: Laxton Bros., Bedford Ltd., Bedford, England, 2/8/38.

Literature: Taylor, H. V. (67), and Wicks, A. T. (71).

Date full bloom: April 27

Fruit characteristics:

Size: diameter 2 1/2", length 2 1/4"

Shape: roundish to conical

Color: 70 to 90%, striped and blushed, crimson red over greenish yellow.

Flesh: creamy, firm to mostly tender, crisp, juicy, sweet to sub-acid.
 Quality: good
 Harvest date: August 7
 Note: good cropper, good early dessert apple; self-fertile.
 Fire blight Index: no reading

'Laxton's Leader'

P.I. 127013

Synonyms: 'Leader'
 Origin: Laxton Bros. Nursery, Bedford, England from cross 'Mr. Gladstone'
 X 'Worcester Pearmain'.
 Source: Laxton Bros., Bedford, England, 2/8/38.
 Literature: Taylor, H. V. (67).
 Date full bloom: April 22
 Fruit characteristics:
 Size: diameter 1 7/8", length 1 5/8"
 Shape: roundish to conical
 Color: 90% blush, red over yellow
 Flesh: white, firm to tender, crisp, juicy, mild, sweet
 Quality: fair to good
 Harvest date: July 6
 Note: rather good quality and appearance, but too small.
 Fire blight Index: 0.66

'Laxton's Pioneer'

P.I. 127015

Synonyms: 'Pioneer'
 Origin: Laxton Bros. 'Cox's Orange Pippin' X 'Worcester Pearmain'
 Source: Laxton Bros., Bedford, England, 2/8/38.
 Literature: none found
 Date full bloom: April 27
 Fruit characteristics:
 Size: diameter 2 5/8", length 2"
 Shape: roundish oblate
 Color: 40 to 60% striped and blushed, red over greenish yellow
 Flesh: white, tender, crisp, breaking, juicy, sweet to sub-acid
 Quality: poor to fair
 Harvest date: July 16-18
 Note: ripens unevenly, very subject to rot.
 Fire blight Index: 2.0

'Lowland Raspberry'

P.I. 143181

Synonyms: 'Himbeerapfel Lievlander', 'Himbeerapfel Livlander', 'Lievland Raspberry', 'Liveland Raspberry', 'Livland Raspberry'.
 Origin: a hardy apple of Russia
 Source: Stone & Wellington, Fonthill Nurseries, Toronto, Ontario, Canada, 12/5/41.

Literature: Beach, S. A. (2), Clark, J. A. (10), Hicks, W. H. (25), Leslie, W. R. (16), Macoun, W. T. (41, 42, 43), Mureoin, H. F. (49), Roberts, O. C. et al. (58), and Straight, E. M. (66).

Date full bloom: April 25-28

Fruit characteristics:

Size: diameter 3", length 2 1/2"

Shape: roundish oblate, slightly truncate

Color: 25 to 40% striped and splashed, crimson to raspberry red over greenish white.

Flesh: white, tender to soft, breaking to melting, moderately juicy, sweet to slightly sub-acid.

Quality: fair to good

Harvest date: July 10

Note: an old variety with rather good dessert quality, perfumed flavor

Fire blight Index: 0.50

'Macross'

P.I. 143183

Synonyms: none known

Origin: a 'McIntosh' seedling originating at Central Exp. Farm, Ottawa, Canada, from seed sown in 1898.

Source: Stone and Wellington, Fonthill Nurseries, Toronto, Ontario, Canada, 12/5/41.

Literature: Macoun, W. T. (44, 45) and Roberts, O. C. et al. (58).

Date full bloom: April 23-27

Fruit characteristics:

Size: diameter 3", length 2 3/4"

Shape: roundish

Color: 10% striped and blushed, crimson red over greenish yellow

Flesh: white, tender, breaking, moderately juicy, sub-acid to acid

Quality: good

Harvest date: July 15-18

Note: large, somewhat too acid for good dessert type; does not resemble 'McIntosh' except in color of skin; seems to produce a majority of abortive seed.

Fire blight Index: 1.5

'Millicent A. Barnes'

P.I. 131079

Synonyms: 'Millicent', 'Millicent Barnes'

Origin: Mr. N. F. Barnes, Eaton Hall, Chester, England from cross 'Cox's Orange Pippin' X 'Goscoyne's Scarlet'.

Source: Clibrans Ltd., Altringham, England, 12/19/38.

Literature: Taylor, H. V. (67)

Date full bloom: April 29

Fruit characteristics:

Size: diameter 3 1/8", length 2 1/2"

Shape: roundish oblate to roundish ovate

Color: 60 to 80% striped and blushed, red over greenish yellow

Flesh: white, firm, crisp, breaking, very juicy, sub-acid to highly acid

Quality: fair

Harvest date: August 5

Note: attractive, firm, good size, juicy, but very tart; small, clear, bright green areas scattered throughout flesh make this apple of questionable value; self-sterile, but a regular bearer at Glenn Dale.

Fire blight Index: 3.66

'Miron Sacharanij'

P.I. 154164

Synonyms: none known

Origin: not known

Source: Weiherstephan Agr. School, Weiherstephan, Bavaria, Germany, 3/28/46.

Literature: none found

Date full bloom: April 25-May 4

Fruit characteristics:

Size: diameter 2 7/8", length 2 1/4"

Shape: oblate to truncate

Color: 50%, striped and splashed, red over greenish yellow

Flesh: greenish white, firm to tender, crisp, moderately juicy, sub-acid.

Quality: fair

Harvest date: July 27

Fire blight Index: 0.83

'Mitschurins Samenloser'

P.I. 154165

Synonyms: 'Bessemianny', 'Bessemianka', 'Bessemianka Michurinska', 'Bessemjanka Milschurinskaja', 'Michurins Samenloser' (incorrect), 'Michurins Seedless', 'Seedless of Mitchurin'.

Origin: I. V. Michurin, USSR, cross of 'Skrischapel' X 'Kernlose Komsinskaya' in 1912.

Source: Weiherstephan Agr. School, Weiherstephan, Bavaria, Germany, 3/28/46.

Literature: Petersen, A. (52), and Zuets, V. K. (74).

Date full bloom: April 25

Fruit characteristics:

Size: diameter 2 1/2", length 1 7/8"

Shape: oblate

Color: 70 to 80%, striped and splashed, red over yellow

Flesh: greenish white, tender, breaking, juicy, sweet to sub-acid

Quality: good

Harvest date: July 26

Note: pleasantly mild flavor

Fire blight Index: 1.0

'Newport Cross'

P.I. 104615

Synonyms: none known

Origin: Agr. and Hort. Res. Sta., Long Ashton, Bristol, England. 1920.

A cross of 'Devonshire Quarrenden' X 'Cox's Orange Pippin'.

Source: Prof. B. T. P. Barker, Univ. of Bristol, through G. T. Spinks, Res. Sta., Bristol, England, 3/9/34.

Literature: Spinks, G. T. (64)

Date full bloom: April 23

Fruit characteristics:

Size: diameter 2 3/4", length 2"

Shape: roundish oblate

Color: 90 to 100%, blushed to solid dark red over yellow

Flesh: white, tender, somewhat mealy, moderately juicy, sweet to slightly sub-acid.

Quality: poor to fair

Harvest date: July 28-30

Note: does not store well.

Fire blight Index: 2.33

'Northern Dumplin'

P.I. 137093

Synonyms: none known

Origin: not known

Source: Pepinieres Armand op de Beeck, Putte-lez-Malines, Belgium, 5/1/40.

Literatures: Simon-Louis (62)

Date full bloom: April 27

Fruit characteristics:

Size: diameter 3 1/4", length 2 1/2"

Shape: roundish oblate to conical

Color: green, no blush

Flesh: white, firm to tender, breaking to somewhat mealy, moderately juicy, acid.

Quality: poor

Harvest date: July 21-29

Note: fruit very acid

Fire blight Index: 3.0

'Ottawa #452'

P.I. 137579

Synonyms: none known

Origin: believed to have originated at the Ottawa station.

Source: Dr. M. B. Davis, Central Exp. Farm, Ottawa, Canada, 4/28/40.

Literatures: none found

Date full bloom: April 23

Fruit characteristics:

Size: diameter 2 3/8", length 1 3/4"

Shape: roundish oblate

Color: greenish yellow, no blush

Flesh: white, tender, crisp to breaking, moderately juicy, sweet to sub-acid.

Quality: fair to good
 Harvest date: July 14-16
 Note: turns mealy in storage; very dwarf grower, rather spreading.
 Fire blight Index: 0.66

'Oxbo'

P.I. 127703

Synonyms: none known
 Origin: a seedling of 'Roxbury Russet' X ('Duchess of Oldenburg')?
 S. Dakota Agr. Exp. Sta., Brookings, South Dakota, introduced 1922.
 Source: N. E. Hansen, Exp. Sta., Brookings, South Dakota, 3/9/38.
 Literature: Hansen, N. E. (23), Magness, J. R. (46).
 Date full bloom: April 22
 Fruit characteristics:
 Size: diameter 3 1/4", length 2 3/4"
 Shape: roundish oblate
 Color: yellow, no blush
 Flesh: white, tender, crisp, breaking, juicy, sub-acid
 Quality: fair
 Harvest date: July 29-August 1
 Fire blight Index: 1.0

'P. J. Berquis'

P. I. 102144

Synonyms: 'P. J. Bergius', 'Safstaholm' (incorrect)
 Origin: a bud sport of 'Safstaholm'
 Source: Dr. C. G. Dahl, Forestandare for Alnarps Tradgardsskola, Akarp, Sweden, 3/2/33.
 Literature: Florin, R. (20).
 Date full bloom: April 25
 Fruit characteristics:
 Size: diameter 2 1/4", length 1 5/8"
 Shape: roundish oblate
 Color: 80 to 95% striped and blushed, bright red over greenish yellow
 Flesh: white, soft, fine, slightly mealy, somewhat dry, mild, sub-acid
 Quality: fair
 Harvest date: July 12-15
 Note: similar, but much better appearance than 'Safstaholm'; one of most attractive fruits of this season; however, does not have the flavor and richness of 'Irish Peach'.
 Fire blight Index: 1.50

'Pomme Framboise'

P.I. 131975

Synonyms: 'Violette Des Quatre Gouts' (?)
 Origin: not known
 Source: Armand Op de Beeck, Putte-les-Malines, Belgium, 3/22/39.
 Literature: Bivort (4), Pom. Soc. France (55), Simon-Louis (62).
 Date full bloom: April 28
 Fruit characteristics:
 Size: diameter 2 3/8", length 2 1/4"
 Shape: oblong, conical
 Color: 80 to 100%, blush, red over yellowish green

Flesh: white, firm to tender, crisp, breaking, moderately juicy, sweet to sub-acid.

Quality: fair to good

Harvest date: July 18-20

Note: excellent quality some years, others only fair to good; turns mealy when stored.

Fire blight Index: 0.16

'Quarrenden Red'

P.I. 126889

Synonyms: 'Devonshire Quarrenden'(?), 'Englischer Scharlack Pippin'(?), 'Morgenrothapfel'(?), 'Quarrendon'(?), 'Quarrington'(?), 'Quarrendon du Comte de Devon'(?), 'Red Quarrenden', 'Rothe Quarrendon', 'Rother 2', 'Sack Apple'(?), 'Secktapfel'(?), 'Weinapfel'(?).

Origin: said to be an old English variety known since the 17th century.

Source: Millier & Sons, Winchester, England, 1/29/38.

Literature: Biedenfeld, F. von (3), Bunyard, Ed. (7), Dillon, W. & F. Petherbridge (16), Hogg, R. (27), Kobel, F. (29), Kvalle, E. (31), Shand, P. (61), Simon L. (62), Spinks, G. (63), and Taylor, H. V. (67).

Date full bloom: April 27

Fruit characteristics:

Size: diameter 2 1/4", length 1 5/8"

Shape: roundish oblate

Color: 60-80%, blush dull red over greenish yellow

Flesh: greenish white, firm crisp, breaking, juicy, sweet to sub-acid.

Quality: fair to good

Harvest date: July 27

Note: rather good quality but dull, unattractive and lacks size.

Fire blight Index: 0.33

'Red Astrakan'

P.I. 148147

Synonyms: 'Abe Lincoln', 'American Red', 'Anglesea Pippin', 'Astracan Rouge', 'Astrachan', 'Astrachan Red', 'Astrachan Rouge', 'Astrakhan Rouge', 'Deterding's Early', 'Hamper's American', 'Red Astracan', 'Red Astrachan', 'Red Astrakhan', 'Rother Astrakan', 'Rother Astrakhan', 'Vermillon d'Ete', 'Waterloo'.

Origin: one of the first of the Russian apples imported into America; imported into England from Sweden 1816.

Source: Chase Bros., Rochester, New York, 4/11/37.

Literature: Beach: S. A. (2), Bunyard, Ed. A. (7), Downing, A. J. (18), Roberts, O. C. et al. (58), Taylor, H. V. (67), and Wright, J. (72).

Date full bloom: April 24

Fruit characteristics:

Size: diameter 2 3/4", length 2"

Shape: oblate

Color: 75%, striped and blushed, crimson to pinkish red over yellowish green

Flesh: white, firm to tender, crisp, breaking, moderately juicy,
sweet to sub-acid.
Quality: fair to good
Harvest date: July 5-13
Note: mild but rather good flavor
Fire blight Index: 0.16

'Reinette Jamin'

P.I. 135645

Synonyms: none known
Origin: not known
Source: Philibert Moussier, Vienne (Isere), France, 2/29/40.
Literature: none found
Date full bloom: April 24
Fruit characteristics:
Size: diameter 3", length 2 1/2"
Shape: oblate
Color: greenish yellow, no blush
Flesh: greenish white, firm, crisp, breaking, moderately juicy,
sub-acid to sprightly.
Quality: fair to good
Harvest date: August 1-5
Note: possibly good as a culinary apple
Fire blight Index: 2.33

'Ruby Gem'

P.I. 133518

Synonyms: none known
Origin: not known
Source: L. P. Rosen & Sons, Carlingford, New South Wales, Australia,
7/25/39.
Literature: none found
Date full bloom: April 22
Fruit characteristics:
Size: diameter 2 7/8", length 2 1/4"
Shape: roundish oblate
Color: 60 to 70%, striped and blushed, red over yellow
Flesh: white, tender, crisp to somewhat mealy, moderately juicy,
sweet to sub-acid.
Quality: fair to good
Harvest date: July 25
Note: drops easily, resistant to wooly aphids
Fire blight Index: 0

'Ruhm aus Kirchwarder'

P.I. 126588

Synonyms: 'Ruhm von Kirchwarder', 'Rhum von Kirchwarder' (incorrect)
Origin: not known

Source: Herm P. Mauk Obstbaumschulen, Wurttemberg, Germany, 1/7/38

Literature: Clausen, H. (11).

Date full bloom: April 24

Fruit characteristics:

Size: diameter 2 5/8", length 2"

Shape: roundish oblate

Color: 95 to 100% blush, striped, crimson red over greenish yellow

Flesh: creamy yellow, firm, crisp, breaking, juicy, sweet to sub-acid

Quality: good

Harvest date: July 26-27

Note: good firm combination dessert, culinary apple, good color

Fire blight Index: 1.0

'Safstaholm'

P.I. 104811

(also 157212 and
199421

Synonyms: 'Deutschlands Obstsorten', 'Engelbrecht', 'Saefstaholms',
'Saftstaholm's', 'Safstaholmsapple', 'Safstaholmsapple', 'Saftstaholmer-
apfel', 'Saftstaholmer Rosenapfel'.

Origin: Sodermanland, Sweden, about 1835, later introduced and widely
grown over northern Europe. Introduced into U.S.A. in 1901.

Source: Dr. C. G. Dahl, Forestandare for Alnarps Tradgardsskola, Akarp,
Sweden, 3/16/34.

Literature: Beach, S. A. (2), Kvalle, E. (31), Mathieu, G. (47), and
Verner, L. (69, 70).

Date full bloom: April 28-29

Fruit characteristics:

Size: diameter 2 1/4", length 1 3/4"

Shape: roundish oblate

Color: 40 to 60%, striped and splashed red over greenish yellow.

Flesh: white, soft, tender, fine texture, crisp to somewhat mealy,
moderately juicy, sweet to mild sub-acid.

Quality: fair

Harvest date: July 14

Note: self sterile, but good pollinator; stores well for an apple of
this season.

Fire blight Index: 1.0

'St. Everard'

P.I. 123732

Synonyms: none known

Origin: raised by a gardener at Papworth St. Everard, near Cambridge,
England, reported as a cross of 'Cox's Orange Pippin' X 'Margil'.

Introduced in 1910 by Veitch & Co.

Source: C. Townsend, Ltd., Fordham, Cambridgeshire, England, 4/15/37.

Literature: Crane, M. B. (13), Taylor, H. V. (67).

Date full bloom: April 24

Fruit characteristics:

Size: diameter 1 7/8", length 1 1/2"

Shape: oblate

Color: 40% striped red over greenish yellow

Flesh: creamy, firm, crisp, juicy, sub-acid.

Quality: fair

Harvest date: July 17

Note: small yellow apple of questionable value; listed as self-fertile.

Fire blight Index: 0.66

'Sharp's Early'

P.I. 133569

Synonyms: 'Lancaster Queen', 'Polecat', 'Queen', 'Sharpe's Early',

'Summer Queen', 'Sweet's Harvest', 'Swett's Harvest'.

Origin: an old variety which is supposed to have originated in United States.

Source: G. A. Nobelius & Sons, Gembrook Nurseries, Emerald, Victoria, Australia, 7/25/39.

Literature: Beach, S. A. (2).

Date full bloom: April 29

Fruit characteristics:

Size: diameter 2 1/2", length 2 1/8"

Shape: roundish conical

Color: 30 to 50%, striped and blushed, pinkish red over greenish yellow.

Flesh: greenish white, firm to tender, crisp to mealy, juicy, sweet to sub-acid.

Quality: poor

Harvest date: July 21

Note: subject to water core

Fire blight Index: 1.66

'Signe Tillisch'

P.I. 105132

Synonyms: 'Sign Tillish', 'Signe Tillish'.

Origin: raised from seed in 1866 by K. H. Tillish in Bjerre bei Horsens (Jutland) Denmark and named for his daughter.

Source: Martino Biancki. Pistoia, Italy, 4/2/34.

Literature: Bunyard, Ed. A. (7), Clausen, H. (11), Goetz, O. (21), Kvalle, E. (31), Muller, et al. (48), Pohl (53), Schmidt, M. (59), Stoll (65), Verner, L. (69).

Date full bloom: April 28

Fruit characteristics:

Size: diameter 3 3/8", length 2 3/4"

Shape: oblate to truncate

Color: greenish yellow, no blush

Flesh: greenish white, firm, crisp, breaking, juicy, sub-acid.

Quality: good to excellent

Harvest date: July 30

Note: has good size, very good quality when ripe, not a culinary apple; appearance not bad, but lacks overcolor.

Fire blight Index: 2.66

'Sunset'

P.I. 157216

Synonyms: none known

Origin: Mr. G. C. Addy, Halstead, Essex, England; a cross between 'Cox's Orange Pippin' and 'James Greeve'.

Source: Blackmoor Nurseries, Hampshire, England, 2/7/47.

Literature: Potter, J. (56).

Date full bloom: April 26

Fruit characteristics:

Size: diameter 2 1/2", length 1 3/4"

Shape: roundish oblate to truncate

Color: 10 to 60%, striped and splashed, orange red over greenish yellow.

Flesh: greenish to creamy white, firm to tender, juicy, sweet to sub-acid.

Quality: fair to good for culinary

Harvest date: July 30 to August 1

Note: some water core some years; resistant to frost; self sterile.

Fire blight Index: 1.66

'Sweet Bough'

P.I. 143190

Synonyms: 'August Sweet', 'August Sweeting', 'Autumn Bough', 'Bough',

'Bough Apple', 'Bough Early Sweet', 'Bough Sweet', 'Early Bough',

'Early French Reinette', 'Early Sweet Bough', 'Early Sweetheart', 'Large

Bough', 'Large Early Bough', 'Large Early Yellow Bough', 'Large Sweet

Bough', 'Large Yellow Bough', 'Niack Pippin', 'Pound's July', 'Sweetbough',

'Sweet Harvest', 'Yellow Bough', 'Washington'.

Origin: said to be of American origin, described by Cox in 1817 under name of Bough apple.

Source: Stone and Wellington, Fonthill Nurseries, Toronto, Ontario, Canada, 12/5/41.

Literature: Beach, S. A. (2), Roberts, O. C. et al. (58).

Date full bloom: May 1

Fruit characteristics:

Size: diameter 2 7/8", length 2 1/8"

Shape: roundish oblate to conical

Color: yellow, no blush

Flesh: white, tender, melting, moderately juicy, sweet

Quality: fair to good

Harvest date: August 3

Note: a mild flavored apple which tends to bruise easily.

'Vinnoe'

P.I. 151262

Synonyms: 'Wine-apple'.

Origin: from Leningrad, U.S.S.R.

Source: Boughen Nurseries, Valley River, Manitoba, Canada, 6/14/45.

Literature: Kordon, P. N. (30).

Date full bloom: April 24

Fruit characteristics:

Size: diameter 2 1/2", length 2"

Shape: oblate

Color: 90 to 100%, splashed to solid, red over green

Flesh: greenish white, tender, breaking to somewhat mealy, moderately juicy, sub-acid to acid

Quality: fair to good

Harvest date: July 18-24

Note: rather good quality but becomes mealy when full ripe.

Fire blight Index: 1.0

'Yellow Transparent'

P.I. 148149

Synonyms: 'De Revel', 'Early Transparent', 'Grand Sultan', 'Revelstone', 'Skwosnoi Schotoi', 'Transparente de Saint-Leger', 'Transparente Jaune', 'White Transparent'(?).

Origin: Russia; introduced into England early in 19th century.

Source: Stark Bros. Nurseries, Louisiana, Missouri, 3/15/37.

Literature: Beach, S. A. (2), Bunyard, Ed. A. (7), Bunyard, G. and O. Thomas (9), Roberts, O. C. et al. (58) and Taylor, H. V. (67).

Date full bloom: April 25-27

Fruit characteristics:

Size: diameter 2 1/2", length 2"

Shape: roundish oblate

Color: greenish yellow, no blush

Flesh: white, firm, crisp, moderately juicy, sub-acid

Quality: fair to good

Harvest date: July 10-12

Fire blight Index: 0.66

'Yephory's Chernogous'

P.I. 144031

Synonyms: 'Zephory's Chernogous'(?)

Origin: Russian variety grown from scions received from Leningrad.

Source: Boughen Nurseries, Valley River, Manitoba, Canada, 5/22/42.

Literature: none found

Date full bloom: April 27

Fruit characteristics:

Size: diameter 2 1/4", length 1 7/8"

Shape: roundish conical

Color: 60 to 80%, striped and splashed, red over greenish yellow

Flesh: greenish white, firm, crisp, breaking, juicy, sweet to mostly sub-acid.

Quality: fair

Harvest date: July 8-12

Note: of questionable value

Fire blight Index: 0.33

'Zigeunerinapfel'

P.I. 126998

Synonyms: 'Gypsy apple', 'Zigeuner-apfel'.

Origin: Russian

Source: Jacob Zavelberg, Koln, Germany, 2/7/38.

Literature: Biedenfeld, F. von (3), Pohl (53), Sehrt, L. (60), Stoll (65)

Date full bloom: April 23

Fruit characteristics:

Size: diameter 2 5/8", length 2 1/2"

Shape: roundish oblate

Color: 80%, striped and blushed, red over yellow

Flesh: creamy white, firm, crisp, juicy, sub-acid to acid.

Quality: fair

Harvest date: July 16-18

Fire blight Index: 1.33

(no variety name)

P.I. 102174

Synonyms: none

Origin: a red apple from Lunnatoten, Opland Fylke, Norway.

Source: Fylkegardner Mork, Drammen, through M. H. Lund, commercial attache, Legation of U. S. A., Oslo, Norway, 3/8/33.

Literature: none found

Date full bloom: April 29

Fruit characteristics:

Size: diameter 2 5/8", length 1 7/8"

Shape: oblate

Color: 45 to 98%, striped and splashed, orange red over greenish yellow

Flesh: greenish white, firm to tender, crisp, breaking, moderately juicy, sweet to sub-acid.

Quality: fair

Harvest date: July 30-31

Note: quality and appearance highly variable different years.

Fire blight Index: 0.33

(no variety name)

P.I. 143973
(also 141871)

Synonyms: none known

Origin: An Indian Head seedling, first fruited in the Dropmore district, unofficially called 'Red Apple'.

Source: Manitoba Hardy Plant Nursery, Dropmore, Manitoba, Canada, 5/11/42.

Literature: none found

Date full bloom: April 26

Fruit characteristics:

Size: diameter 2 1/2", length 2"

Shape: roundish

Color: 90 to 100%, blushed, crimson to dark red over greenish yellow

Flesh: greenish white, firm to tender, crisp, breaking, moderately juicy, sweet to sub-acid.

Quality: good to excellent

Harvest date: July 30

Note: has excellent color and appearance, 'McIntosh'-like quality except slightly more acid, becomes somewhat mealy when full-ripe.

Fire blight Index: 1.33

